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Process of Care Partly Explains the Variation in Mortality Between Hospitals After Peripheral Vascular Surgery

Hoeks S.E., Scholte op Reimer W.J.M., Lingsma H.F., van Gestel Y., van Urk H., Bax J.J., Simoons M.L., Poldermans D. Eur J Vasc Endovasc Surg 2010;40:147–54.

Objectives: The aim of this study is to investigate whether variation in mortality at hospital level reflects differences in quality of care of peripheral vascular surgery patients.

Design: Observational study.

Materials: In 11 hospitals in the Netherlands, 711 consecutive vascular surgery patients were enrolled.

Methods: Multilevel logistic regression models were used to relate patient characteristics, structure and process of care to mortality at 1 year. The models were constructed by consecutively adding age, sex and Lee index, then remaining risk factors, followed by structural measures for quality of care and finally, selected process of care parameters.

Results: Total 1-year mortality was 11%, ranging from 6% to 26% in different hospitals. Large differences in patient characteristics and quality indicators were observed between hospitals (e.g., age > 70 years: 28–58%; beta-blocker therapy: 39–87%). Adjusted analyses showed that a large part of variation in mortality was explained by age, sex and the Lee index (Akaike's information criterion (AIC) = 59, $p < 0.001$). Another substantial part of the variation was explained by process of care (AIC = 5, $p = 0.001$).

Conclusions: Differences between hospitals exist in patient characteristics, structure of care, process of care and mortality. Even after adjusting for the patient population at risk, a substantial part of the variation in mortality can be explained by differences in process measures of quality of care.

Heterotopic Ossifications in Midline Abdominal Scars: A Critical Review of the Literature

Koolen P.G.L., Schreinemacher M.H.F., Peppelenbosch A.G. Eur J Vasc Endovasc Surg 2010;40:155–9.

Heterotopic ossification (HO) is the formation of bone outside the skeletal system, including old incisions. Although a well-known complication after orthopaedic surgery, it is still considered an uncommon phenomenon after vascular surgery. Recent data, however, show that up to 25% of all patients develop HO after midline abdominal surgery. In this article, we present the case of a symptomatic HO, 7 years after an aortobiiliac prosthetic reconstruction for an abdominal aortic aneurysm. Furthermore, we review current insights into the aetiology and show bone morphogenetic proteins to play a crucial role. Treatment options are also reviewed, but lacking any supportive evidence for other therapies, surgical excision with primary closure is the treatment of choice.

Dual Antiplatelet Therapy Prior to Carotid Endarterectomy Reduces Post-operative Embolisation and Thromboembolic Events: Post-operative Transcranial Doppler Monitoring is now Unnecessary

Sharpe R.Y., Dennis M.J.S., Nasim A., McCarthy M.J., Sayers R.D., London N.J.M., Naylor A.R. Eur J Vasc Endovasc Surg 2010;40:162–7.

Background: Thrombotic stroke following carotid endarterectomy (CEA) is preceded by high-grade embolisation (detected using transcranial Doppler (TCD)) and can be prevented by incremental doses of Dextran. However, this strategy is labour intensive and Dextran manufacture has now ceased. A randomised trial has suggested that a single 75 mg dose of Clopidogrel (administered the night before surgery in addition to daily 75 mg Aspirin) significantly reduces post-CEA embolisation. We hypothesized that this model of dual antiplatelet therapy might significantly reduce the need for adjuvant Dextran therapy.

Methods: Retrospective audit of prospectively acquired data in 297 patients undergoing CEA between 01.08.2006 and 30.07.2009. All received routine Aspirin (75 mg daily) in addition to a single 75 mg dose of Clopidogrel the night before surgery. All underwent completion angioscopy and those with a temporal window ($n = 270$) underwent intra- and post-operative TCD monitoring.

Results: High rate embolisation requiring Dextran (>25 emboli in any 10 min period) occurred in only 1/270 patients (0.4%), significantly less than the 3.2% rate in historical controls where Clopidogrel was not administered. There were no peri-operative deaths, but 3/297 patients suffered non-disabling strokes (intra-operative extension of a pre-existing deficit, haemorrhage into lentiform nucleus after hypertensive crisis, contralateral embolic stroke). The overall 30-day death/stroke rate (1.0%) was not-significantly lower than the 2.6% rate observed in the preceding 821 patients.

Conclusions: 75 mg Clopidogrel administered the night before surgery (in addition to daily 75 mg Aspirin) was associated with a significant reduction in post-operative embolisation and Dextran utilisation. No ipsilateral thromboembolic ischaemic events occurred in this series. As a consequence of this audit, one dose of 75 mg Clopidogrel will continue to be given pre-operatively (in addition to daily 75 mg Aspirin) and routine post-operative TCD monitoring has now ceased.

Anatomical Suitability For Endovascular AAA Repair May Affect Outcomes following Rupture

Perrott S., Puckridge P.J., Foreman R.K., Russell D.A., Spark J.I. Eur J Vasc Endovasc Surg 2010;40:186–90.

Objectives: Single centre series have suggested that endovascular aneurysm repair (EVAR) for ruptured abdominal aortic aneurysms (rAAA) may reduce mortality versus open surgery. This has not been substantiated in the only randomized controlled trial, leading to suggestion that anatomical suitability for rEVAR may independently improve prognosis of rAAA. Our aim was to assess the outcome of open rAAA repair in patients dependant on their suitability for rEVAR on pre-operative computed tomography (CT) assessment.

Methods: A retrospective review of all ruptured aneurysms presenting to our unit since January 1998 was performed. Patients were grouped based on anatomical suitability for rEVAR by pre-operative CT.

Results: Of 118 patients presenting with rAAA, 48 underwent pre-operative CT. Of these 9 scans had been "culled" and were excluded. 16 patients were suitable for rEVAR and 23 unsuitable. The groups were well matched demographically with no difference in Glasgow Aneurysm Score between groups. There was a non-significant trend towards reduction in 30-day mortality for patients suitable for EVAR (suitable 6.9% versus unsuitable 30.4%; $P = 0.066$) with no difference in operative time, transfusion requirement, length of stay or in-hospital morbidity.

Conclusions: Anatomical suitability for EVAR seems to beneficially affect outcome following open repair for ruptured AAA. Further study is required to confirm these findings.

Morphological and Mechanical Changes in Juxtarenal Aortic Segment and Aneurysm Before and After Open Surgical Repair of Abdominal Aortic Aneurysms

Majewski W., Stanišić M., Pawlaczyk K., Marszałek A., Seget M., Biczysko W., Krasiński Z. Eur J Vasc Endovasc Surg 2010;40:202–8.

Objective: The aim of study was to assess how the ultrastructure of the wall of aortic aneurysms, sac and neck influences aortic wall distensibility and proximal dilatation 2 years after open repair.

Methods: Biopsies for electron microscopy were taken from aneurysmal sac and neck of 30 patients. Patients were assessed by computed tomography (CT) and ultrasound for aneurysm diameter and distensibility (M-mode ultrasonography).

Results: Postoperative CT of the aortic stump distinguished two groups. Group I ($n = 11$) with little enlargement, median 1 mm (1–3 mm) and group II ($n = 19$) with significant aortic enlargement, median 5.2 mm (4–12 mm). In group II, changes in elastic fibres in the aneurysm neck were comparable to, but as extreme as in the aneurysm sac. For group I, the distensibility of the aneurysmal sac was significantly lower than in the neck or at the renal arteries. For group II, the distensibility in both the neck and sac was significantly lower than at the juxtarenal segment ($p = 0.01$). The biopsies of group II patients showed the extensive degeneration of normal architecture, which was associated with altered wall distensibility in both the aneurysmal neck and sac.

Conclusions: Disorganisation and destruction of normal aortic architecture at the ultrastructural level are associated with decreasing aortic distensibility. Low aortic neck distensibility is associated with proximal aortic dilatation at 2 years postoperatively.